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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/612,241 | 07/01/2003 | James Lovette | COOL-01400 | 3319 |

7590 04/07/2006

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| EXAMINER |
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DUONG, THO V

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| ART UNIT | PAPER NUMBER |
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3753

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-------------------------------|--------------------------------|--|
| Office Action Summary | Application No. 10/612,241 | Applicant(s) LOVETTE ET AL. | |
| | Examiner Tho v. Duong | Art Unit 3753 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-81 is/are pending in the application.
- 4a) Of the above claim(s) 4, 25, 26, 31, 32, 38, 54, 55, 60, 61 and 66-81 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-20, 30, 33-37, 39-49, 59, 62, 64 and 65 is/are rejected.
- 7) ☒ Claim(s) 21-24, 27-29, 50-53, 56-58 and 63 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: <u>4/3/06</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Receipt of applicant's amendment filed 1/20/06 is acknowledged. Claims 1-81 are pending. Claims 4,25-26,31-32,38,54-55,60-61 and 66-81 remain withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-6,8,15,16,20,30,34-37,39-40,42,49,59 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (US 5,810,077). Nakamura discloses (figures 1,19-27) a heat exchanger comprising a manifold layer (6,7) having a first plurality of openings (8) for providing a cooling material to the heat exchanger and a second plurality of openings (8) for removing the cooling material from the heat exchanger; an interface layer (5) coupled to the manifold layer, the interface layer having a plurality of vertically stacked route channels (3), each route extends from one of the first plurality of openings and terminates at a corresponding one of the second plurality of openings, the routes for carrying the cooling material. Nakamura further discloses a cross-section of the plurality of routes substantially contained in a plane non-parallel to a heat exchanging plane.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7,9-14,17-19,41 and 43-48 are rejected under 35 U.S.C. 103(a) as obvious over Nakamura. Nakamura substantially disclose all of applicant's claimed invention as discussed above except for the suitable material of the thermal interface layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the suitable material as claimed for the thermal interface layer, since it has been held to be within the general skill of a worker in the art to select known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Furthermore, applicant does not disclose any criticality or unexpected result for selecting the claimed material. Moreover, it appears that the interface layer would perform equally well with any conductive material. Accordingly, the use of material is deemed to be a design consideration which fails to patentably distinguish over the prior art of Nakamura.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Fukuoka et al. (US 5,564,497). Nakamura substantially discloses all of applicant's claimed invention as discussed above except for the limitation that a pump is provided in the inlet opening. Fukuoka discloses (figure 1) a fluid cooling system that has a pump (3) fluidly connected to a manifold of the heat exchanger for the purpose of pumping the coolant into the cooling system. It would have been obvious to one having ordinary skill in the art at the time the

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invention was made to use Fukuoka's teaching in Nakamura's device for the purpose of pumping the coolant into the cooling system.

Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Mathews (US 5,274,920). Nakamura substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the plate with flow channels are formed by stamping. Mathews discloses (figures 1-4, column 2, lines 25-28 and column 5, lines 42-47) that stamping process has been used in forming flow channels on face of a plate for the purpose of simplifying the manufacturing steps of the cooling system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Mathews's teaching in N's system for the purpose of simplifying the manufacturing steps of the cooling system.

Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Wang (US 6,477,045 B1). Nakamura substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the plate with flow channels is made of injection molding. Wang discloses (figure 3 and column 2, lines 36-56) that an injection molding process has been used to form a plate with flow channels for the purpose of forming a metal thermal interface layer in a cooling system with a known process in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Wang's teaching in Nakamura's system for the purpose of forming a metal thermal interface layer with a known process in the art.

Allowable Subject Matter

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Claims 21-24,27-29,50-53,56-58 and 63 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keasel Eric can be reached on 571-272-4929. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tho v Duong
Primary Examiner
Art Unit 3753



TD
April 3, 2006